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**EXAMINING THE RELATIONSHIP BETWEEN
EARLY COLLEGE CREDIT AND HIGHER EDUCATION ACHIEVEMENT
OF FIRST-TIME UNDERGRADUATE STUDENTS IN SOUTH TEXAS**

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ABSTRACT

The purpose of the study was to examine the relationship between early college credit and the success of first-time undergraduate students in South Texas. Many high school graduates are entering college with credits earned while they were enrolled in high school. Researchers have examined the value of early college credit in easing students' transition from high school to college. Additionally, researchers have investigated the value of early college credit in enhancing students' early college persistence rates. This researcher focused on the relationships between early college credit and college student achievement of first-time undergraduate students. In the study, student achievement was measured by college grade point average.

The population of this study consisted of 8,627 first-time undergraduate students who entered during class years 1997 to 2005, at Texas A&M University-Kingsville. A statistical analysis of institutional data was conducted to compare the grade point averages of students who entered the university with early college credit with the grade point averages of students who entered the university without early college credit. Within the statistical analysis, the researcher controlled for the academic achievement influences of high school class ranking and American College Testing (ACT) aptitude test scores.

There appears to be a moderate, statistically significant relationship between early college credit and higher education achievement, as measured by grade point average, within the population at Texas A&M University-Kingsville, when controlling for the effects of ACT scores and high school ranking. Those students with early college credit tended to earn a higher grade point average than those without early college credit.

Introduction

In his book, *Escalante: The Best Teacher in America*, Jay Mathews (1988) chronicled the exceptional teaching of Jaime Escalante at James A. Garfield High School in East Los Angeles, California. Escalante encouraged his at-risk indigent Latino students via personal concern, commitment, and an ethic of hard work and personal pride (Mathews, 1988). Escalante's story was retold in the 1988 motion picture, *Stand and Deliver*, which featured Edward James Olmos as Escalante.

Many of Escalante's pupils were first generation high school students, much like many of the South Texas students in this study. Escalante's students first gained notoriety in 1982 when the media spotlight focused on the results of their calculus Advanced Placement (AP) tests (Mathews, 1988). Of 18 students who took the calculus AP test, the scores of 14 students were disputed. Those 14 students were wrongly accused of copying from each other and 12 of them agreed to retake the test.

Mathews pointed out that the *Los Angeles Times* really missed the point in their reporting of the story. It was not significant that some of Escalante's students were accused of cheating, nor was it significant that the Garfield High School principal retaliated with charges of racial bias. The significance of the story in 1982 was how a class of 18 inner city high school youth from a school with 80% of the students living below the poverty level could become prepared to take and pass a calculus AP test (Mathews, 1988). Early college credit via AP examination has grown since that time, becoming so universal that student scores on AP exams are now as important a measure of high school success as Scholastic Achievement Test (SAT) scores (Mathews, 1988).

Advanced Placement classes are more available than ever before, and they are now offered online (The College Board, 2005). *Newsweek* magazine now ranks colleges and universities based on percentages of students entering with AP class credits and other early college credit hours. *Newsweek's* college ranking list orders schools based on participation in AP tests written and graded not by those teaching the AP classes, but by outside experts (Mathews, 2005).

As the requirement of a college degree becomes standard in the workplace (Pennington, 2004), the popularity of accelerated education by means of AP classes and other early college credit programs has increased (Ewers, 2005). Interestingly, students are enrolling in early college classes not only to get a head start, but also to keep from falling behind fellow high school students (Ewers, 2005). According to Pennington (2004), the goals of accelerated early college credit programs include: to increase the number of students who graduate from college, to reduce the amount of time that it takes them to do so, and to reduce disparities of educational achievement based on race and income. Accelerated education has become more and more popular, has taken many forms, and has blurred the lines of demarcation between secondary and postsecondary school (Olson, 2006).

High school students can begin taking college courses as early as their freshman year (Porter, 2003). Students can potentially graduate from high school with more than 60 hours of college credit, and even an Associate Degree, earned at the same time (The College Board, 2003). Students not only become familiar with the freedoms and challenges of the college style course schedule, but they are also allowed to adjust their personal high school schedule to take the college level courses for which they qualify. In use in high schools across the country, early college credit programs give high school students a preview of the higher education experience, and usher students through what can sometimes be a very intimidating transition from high school into college (Bailey, Hughes, & Karp, 2002). Early college programs, identified by various names in different states, are made possible by state legislation and agreements among high schools, junior colleges, colleges, universities, and the College Board (The College Board, 2003).

Early college credit programs can accelerate degree completion, cutting as much as two years off a combined high school and college education, by minimizing course duplication between high school and college classes (Rouge Community College, 2006). Early college credit programs can also represent a significant cost savings to students and parents, as students can continue to live at home

(Black Hills State University, 2006), and the local school district often pays for the cost of the college courses (Santa Barbara City College, 2007).

In advanced placement programs, high school students take an accelerated course taught at their own high school. Upon completion of the course, they take a College Board AP Exam, by which they can earn college credit hours and/or advanced college placement (The College Board, 2003). As additional incentive, some schools will pay for the AP Exam if students pass it and other schools even reward passing students with a financial stipend for their academic success. Some high schools further encourage excellence by providing partial college scholarships to graduates who have participated in early college credit programs (Matthews, 2004).

In concurrent enrollment programs, students who meet certain achievement standards take college level courses on a college campus along with college students, while concurrently enrolled in high school (Texas Business and Education Coalition, 2002). These students have the advantage of actually being on the college campus. It is thought that this arrangement best eases the transition from high school to college that can be very difficult for some students and can contribute to their decisions to drop out (Bailey et al., 2002).

In dual credit programs, students enroll in college level courses taught either on the high school campus by college-certified faculty, or on a college campus (Texas Business and Education Coalition, 2002). The college level courses replace the high school level courses in a given subject, so that students need not take the same courses on both high school and college levels. Generally speaking, one semester of college course work replaces two semesters of high school course work (Texas Business and Education Coalition, 2002).

Porter (2003) compared the academic success of dual-enrolled high school students to their non-dual-enrolled counterparts in a study conducted in Tennessee. Porter found that dual-enrolled students had significantly higher first-semester college grade point averages and higher overall college

grade point averages than non-dual-enrolled students (Porter 2003). However, Porter also found that dual-enrolled students had higher high school grade point averages and higher ACT scores than their non-dual-enrolled counterparts. The differences in college grade point averages may therefore have been the result of higher individual achievement levels rather than the positive result of early college credit programs. Porter believed that students who enter college with an early college experience better understand what will be required of them, and that this experience gives them an emotional and academic advantage toward their success in higher education (Porter, 2003).

Purpose of the Study

This researcher examined the relationships between high school student participation in various early college credit programs and higher education achievement, specifically among students in South Texas, in order to determine whether being involved in an early college credit program has a positive impact on student achievement. Early college credit programs deserve investigation to determine the extent to which these programs are related to students' higher education success.

It was specifically the purpose of the current study to determine to what extent early college credit is related to higher education achievement, as measured by college grade point average, while holding constant the possible effects of ACT scores and high school class ranking. Prior studies have indicated that the control variables ACT scores and high school class ranking are among the best quantitative predictors of success in higher education (Williams, 2004). Although early college credit is known by several different names and is available in several different forms, the current study focused on the effect of three of the most popular early college credit programs: advanced placement, dual credit, and concurrent enrollment.

Research Question

The researcher utilized the following research question for the current study. While holding constant the effects of ACT scores and high school class ranking, what is the relationship between early

college credit and higher education achievement, as measured by grade point average, among first time undergraduate students at Texas A&M University-Kingsville?

Procedure

The researcher sought to determine whether early college credit appears to be a reliable predictor of academic success. The study was quantitative in nature, and utilized a causal-comparative research design. This type of design seeks to determine, without the use of a controlled experiment, whether there is a cause-effect relationship between a certain stimulus, known as the independent variable, and an apparent response, known as the dependent variable (Borg, Gall, & Gall, 1992). The causal-comparative design is often used in educational research in situations where it is not possible to interject an experimental manipulation (Gall, Borg, & Gall, 1996). The typical causal-comparative study begins by forming two groups based upon one variable and seeking out differences between the two groups on a second variable.

The population for this study consisted of 8,627 first-time undergraduate students who entered during class years 1997 to 2005, of Texas A&M University-Kingsville. This window, 1997 through 2005, covered most of the years when students with early college credit could have matriculated at the university. The researcher utilized data recorded through the fall of 2007 for the entire population of 8,627 first-time undergraduate students and alumni. Because the study involved students from multiple class years, it included alumni, current students, and some students who had discontinued their education prior to completion of their degrees.

The study utilized data gathered by the Office of Institutional Research and the Office of the Registrar at Texas A&M University-Kingsville. Outcomes from the data analysis may be generalizable to this particular university student population. It is unknown whether the outcome can be generalized to other university student populations.

Descriptive statistics were applied to examine the obtained data. Data were analyzed using the Statistical Package for the Social Sciences (SPSS version 11.5), specifically by using a Pearson r procedure, partialling out the effects of the control variables, ACT scores and high school class rank. The Pearson r coefficient is a “mathematical expression of the direction and magnitude” of a relationship between two sets of continuous scores (Gall et al., 1996, p. 767).

Study Participants

From the fall of 1997 to the fall of 2005, more than 10,000 undergraduate students entered Texas A&M University-Kingsville. Of these, 8,627 were first time in college students, who had never before taken college courses as part of a degree program, and who comprised the population of interest for the current study. The mean age of students in the population upon entering was $M = 19.4$ years, $SD = 3.3$.

The mean high school ranking of students was $M = 58^{\text{th}}$ percentile, $SD = 25.6$. The mean high school grade point average of the population was $M = 3.3$, $SD = 0.6$, as compared to a mean university grade point average of $M = 2.1$, $SD = 1.1$. The mean ACT score of the population was $M = 18.7$, $SD = 4.0$.

Table 1

Descriptive Statistics for Age, High School Rank, University Grade Point Average, and ACT Scores

Variable	N	M	SD
Age	7,474	19.38	3.345
High School Ranking	8,021	57.85	25.583
High School GPA	7,993	3.286	.5604
University GPA	8,627	2.135	1.0540
ACT Score	7,915	18.74	3.961

The variability of the population size N in Table 4.1 is due to missing values in the data provided by the TAMUK Office of Institutional Research. The ethnic makeup of the population was 67.8 percent Hispanic, 23.8 percent white non-Hispanic, 6.2 percent African American, 2.0 percent others, and 0.2 percent unknown.

Table 2

Frequency Analysis of Ethnicity Variable

Category	n	%
White	2,049	23.8
African American	539	6.2
Hispanic	5,852	67.8
Asian	64	.7
American Indian	23	.3
Other	84	1.0
Unknown	16	.2
Total	8,627	100.0

Considering the entire population, the mean number of early college credit hours that students earned while in high school was relatively low, $M = 1.8$ hours, $SD = 4.8$. Within the population, 1,661 students (19.3 percent) earned early college credit hours via Advanced Placement, Concurrent Enrollment, or Dual Credit programs while enrolled in high school. Of those students who earned early college credit, the amount of early college credit earned per student ranged from one hour to sixty hours of credit. The mean hours of early college credit was $M = 9.3$ hours, $SD = 7.2$.

Table 3

Descriptive Statistics for Study Variables

Variable	<i>N</i>	<i>M</i>	<i>SD</i>
ECC* for Total Population	8,627	1.78	4.828
ECC for ECC Earners	1,661	9.27	7.192

*Early College Credit

Results

The researcher addressed the following null hypothesis. There is no statistically significant relationship between early college credit and higher education achievement, as measured by grade point average, among students at a South Texas University, when controlling for the effects of ACT scores and high school class ranking. The researcher utilized a Pearson r procedure, controlling out the effects of the control variables, ACT scores and high school class ranking. The results of the partial Pearson r procedure, $r_p = .079$, $p < .001$, led to the rejection of the null hypothesis, and indicated a small yet statistically significant relationship between early college credit and university grade point average.

Table 4

Partial Correlation Coefficient of Early College Credit and University Grade Point Average, Controlling for ACT Scores and High School Class Ranking

Variable	<i>N</i>	r_p	p
Correlation of ECC and UGPA*	7,564	.0790	.000

*University Grade Point Average

Once the effects of the positive success indicators ACT scores and high school class ranking are controlled out, early college credit appears to be positively related to higher education achievement, as

measured by grade point average. That is, the more early college credit hours a student earns, the higher that student's university GPA tends to be.

In order to determine the relationship between early college credit and university GPA exclusively among early college credit earners, the researcher performed another Pearson r procedure with only the early college credit earners, controlling out the effects of the control variables, ACT scores and high school class ranking. The results of the partial Pearson r procedure for early college credit earners was $r_p = .096$, $p < .001$, which indicated a slightly stronger statistically significant relationship between early college credit and university grade point average among early college credit earners.

Table 5

Partial Correlation Coefficient of Early College Credit and University Grade Point Average for Early College Credit Earners, Controlling for ACT Scores and High School Class Ranking

Variable	N	r_p	p
Correlation of ECC and UGPA	1,584	.0956	.000

This second Pearson r procedure reinforced the evidence of positive relationship between early college credit and higher education achievement, as measured by grade point average, among students at Texas A&M University-Kingsville, when controlling for the effects of ACT scores and high school class ranking.

Discussion

The outcome of the current study appears to indicate that South Texas high school students who prepared for higher education by participation in early college credit programs outperformed students who did not participate in such programs, in their achievement in higher education. Within the population there appears to be a small to moderate, statistically significant relationship between early college credit and higher education achievement, as measured by grade point average, when controlling for the effects of ACT scores and high school class ranking. It is worth restating that the current study

was limited in scope to the impact of early college credit programs on the higher education success of students who have attended and graduated from a single university located in South Texas, Texas A&M University-Kingsville, and that only the effects of early college credit programs were investigated in the current study. Other variables related to student success in higher education were not evaluated. It may be that other variables that were not studied are even more closely related to academic success than early college credit. The question lingers as to whether the academic benefit of the early college experience reflects the success of the program, or the success of the highly motivated individual students involved.

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